

## Abstract

A steering and suspension system for bicycles and motorcycles that consists of an axle that is pivotally attached to the forward ends of two side rails that are positioned along each side of the vehicle wheel. The rearward ends of the side rails are pivotally attached to the ends of a rear rail that is parallel to the axle and positioned at the rear of the vehicle wheel. The length of the rear rail is large enough to allow sufficient clearance between the vehicle wheel and the side rails during a turn so that an acceptable turning angle is achieved. When viewed from the top, the system forms an isosceles trapezoid with pivots at each corner. The axes of all four pivots are parallel to each other and perpendicular to the axle axis. This restricts movement of the axle and side rails in a plane that is perpendicular to the plane of rotation of the wheel. The vehicle wheel is controlled by applying a longitudinal force to the axle through conventional control rods and ball joints. Suspension of the wheel is accomplished by pivotally attaching the rear rail to the vehicle frame. The axis of the pivot is parallel to the centerline of the rear rail and perpendicular to the longitudinal centerline of the vehicle. This allows the side rails and axle to move in a plane that is parallel to the plane of rotation of the wheel in the same manner as a conventional rear swing arm suspension. Control of the suspension is achieved by a conventional coil-over-shock unit acting through a progressive rate linkage to a lever rigidly attached to the rear rail.